# "Macroinvertebrate Mayhem"

LAB CRAWL 2008 ENVIRONMENTAL SURVEY ACTIVITY #4

Summer 2008

## "Macroinvertebrate Mayhem" Environmental Survey Activity #4

Macroinvertebrate Larvae

This activity was taken from the "Project WET" Curriculum and Activity guide (c1995; The Watercourse and the Council for Environmental Education).

The main purpose of this activity is to show students that appearances can be deceiving, especially when it comes to the quality of a crystal-blue stream.

By showing how different organisms can handle varying water quality conditions, and by explaining how population diversity provides insight into an ecosystem's health, this is an active way to get students thinking about water quality in a new way.

By simulating how environmental stressors affect macroinvertebrate populations, students will be able to see the role biodiversity plays in the overall health of an ecosystem

## MATERIALS

- MACROINVERTEBRATE INDENTIFICATION CARDS
- PILLOWCASES OR BURLAP SACKS
- POSTER PAPER / WHITEBOARD/ETC.
- OPTIONAL RESOURCES (FIELD GUIDES, TEXTS, ETC.)

## Activity Directions

This is a sample data table from a completed game :

| organism | tolerance | start | Left after Round 1 | Left after Round 2 | Left after round 3 |
|---|---|---|---|---|---|
| caddisfly | INTOLERANT | 5 | 2 | 2 | 2 |
| Mayfly nymph | INTOLERANT | 5 | 4 | 1 | 0 |
| Stonefly nymph | INTOLERANT | 4 | 4 | 4 | 2 |
| Dragonfly nymph | FACULTATIVE | 5 | 5 | 4 | 4 |
| Damselfly nymph | FACULTATIVE | 4 | 4 | 4 | 3 |
| Midge larva | TOLERANT | 4 | 6 | 7 | 9 |
| Rat-tailed maggot | TOLERANT | 4 | 6 | 9 | 11 |
| Totals: | | 31 | 31 | 31 | 31 |

## S.S.S. Science Addressed:

SC.B. 2.3

SC.C.1.3
2.3

SC.D.1.3
2.3

SC.F.1.3

S.C.G. 1.3
2.3

SC.H.1.3
2.3
3.3

Macroinvertebrate Mayhem Directions

1. Since this is an active TAG game, before you begin, explain any rules you would have for how to tag, where the boundaries are, etc.

2. Assign one student to be the ENVIRONMENTAL STRESSOR (this can represent fertilizer run-off, sewage, pollution, etc.). Discuss and brainstorm with students how those stressors can affect a stream.

3. Divide the remaining students into seven (7) different groups, each representing one of the typical macroinvertebrate types, passing out the appropriate card to be worn.

4. Some of the invertebrates have a unique hindrance that will make their traveling through their environment difficult. Hindrances represent an organism's sensitivity to stressors. See the chart below for the specific hindrances to be used.

5. Record the number of students representing the various types of macroinvertebrates onto the chart paper or similar display area.

6. Line up all macroinvertebrates on one end of the field, placing the stressor in the center. Macroinvertaebrates must cross the field without being tagged in order to have considered to have survived.

7. If an invertebrate is tagged before making the trip successfully, they are to move to the sidelines and flip their identification card over, representing their organism being replaced by a more tolerant species. Tolerant species that are tagged DO NOT flip their cards again.

8. Each round ends when all invertebrates have been tagged or have successfully made their journey across their environment. Record organism numbers appropriately after each round.

Intolerant Macroinvertebrates and Hindrances

| | | |
|---|---|---|
| Caddisfly | both feet in a bag, hopping across field, stopping For a breath every 5 hops | they are intolerant of low oxygen |
| Stonefly | must do push-up every 10 steps | move their abdomens to increase oxygen absorption |
| Mayfly | must flap arms and spin in circles while traveling | move their gills to increase oxygen absorption |